

APPLICANT'S INTERVIEW SUMMARY

Applicant's interview of March 27, 2003 with the Examiner, supervised by Primary Examiner Tamai, is summarized in the Examiner's Interview Summary. Applicant agrees with the Examiner's Interview Summary. U.S. Patent No. 3,535,566 to Smith, U.S. Patent 5,625,241 to Ewing et al., and U.S. Patent 2,017,624 to Janzen were discussed as possibly providing a basis for rejection of claims Applicant proposed. Applicant has nothing else to add.

REMARKS

Claims 1, 6, 10, 19 and 20 are amended to overcome rejections over the prior art.

Claims 3, 5, 9 and 13-18 are cancelled.

Claims 21-36 are added.

The amendment leaves the application with 6 independent claims and 27 dependent claims. Applicant must therefore pay \$189 for three excess independent claims and seven excess total claims. A check for this amount is enclosed with this Amendment.

Claims 1

Claim 1 recites an elongated core with a outwardly bowed surface. Coils are wound about the core profile and sequentially disposed along the length of the core. Claim 1 is amended to include an additional limitation taken from original claim 10. The added limitation is an elongated permanent magnet parallel with the elongated core.

Claim 1 is not disclosed by the cited references, including the references to Smith, to Ewing, and to Janzen, as follows:

Smith's machine does not have the claimed permanent magnet. In Smith, the rotor segment halves 22 and 23 are not permanent magnets but rather laminated iron like the core 37, as indicated at col. 3, lines 19-27. The "poles" of Smith's rotor segments 22 and 23 are not permanent but "electrically excited or induced" (col. 1, lines 59-62). Smith provides no suggestion or motivation to replace the laminated material of his rotor with a permanent magnet.

Anything that Smith teaches regarding the shape of a core surrounded by his laminate would not apply to the shape of a core surrounded by the claimed permanent magnet. That is because laminates and magnets are used for very different purposes, due to their very different magnetic properties. One property in which they differ is that magnets produce magnetic flux, whereas laminates conduct flux. Magnets by design are resistant to induced flux change (and thus to eddy currents), whereas laminates by design are conductive to flux change (and thus eddy currents). A

lamine can conduct flux in any direction; whereas in a magnet, the flux is aligned in a basically single preset direction. This last property is why all prior art toroidally-round permanent-magnet (PM) motors all have cores with flat sides, so that the entire side can be perpendicular to the basically-unidirectional flux.

Ewing's generator does not have the claimed core. Ewing's coils 17 are rather wound about a bobbin (col. 3, lines 26-27) "without resort to the use of laminations or other media to channel the magnetic field" (col. 2, lines 19-21), such that the flux lines are channeled through air instead of a core. Inserting a core through Ewing's coils 17 would render Ewing's generator unworkable by blocking the carrousel magnets 25a and 25b from passing through the coils 17. Furthermore, Ewing's permanent magnets 19, 21, 22, 25a and 25b are not, as claimed, parallel with a core.

Janzen's motor does not have the claimed "coils . . . sequentially disposed" along the length of a core. Janzen's motor rather has only one coil, with a configuration that is unsuitable for multiple coils. Janzen's motor further does not have the claimed permanent magnet. Janzen's stator and rotor are rather both made of cast iron (last column, lines 14-15).

The references, even in combination, do not disclose or suggest claim 1. For example, even when taken together, the references do not disclose or suggest an elongated permanent magnet parallel with the core. Therefore, claim 1 is patentable over the cited prior art.

Claims 2, 4, 6-8, 10-12 and 34-36

Claims 2, 4, 6-8, 10-12 and 34-36 depend from claim 1. The limitations that claims 2, 4, 6-8, 10-12 and 34-36 add to claim 1 distinguish the invention further from the prior art. Therefore, claims 2, 4, 6-8, 10-12 and 34-36 are also patentable.

This is illustrated by the following exemplary dependent claims:

Claim 12

For example, claim 12 depends from claim 1, which is distinguished from the prior art as explained above. Claim 12 is further distinguished from the prior art by reciting the magnet being magnetized such that each flux line is generally perpendicular to the section of the magnet surface that the flux line intersects (as illustrated in Figs. 18 and 19 of the application). This is not suggested by Smith or any other reference. Claim 12 is thus patentable over the cited prior art.

Claim 34

Claim 34 depends from claim 1, which is distinguished from the prior art as explained above. To distinguish the invention even further from the prior art, claim 34 adds a limitation not included in the originally filed claims but supported in the specification at page 7, lines 28-30 and illustrated in Fig. 18. This limitation is that the core profile is generally lenticular. This is not suggested by any of the references. Claim 34 is thus patentable over the cited references.

Claim 35

Claim 35 depends from claim 1, which is distinguished from the prior art as explained above. To distinguish the invention even further from the prior art, claim 35 adds a limitation not included in the originally filed claims but supported in the specification at page 7, lines 28-31 and page 8, lines 10-11, and illustrated in Figs. 18 and 19. This limitation is that the core profile is thickest where the flux is strongest and thinnest where the flux is weakest.

Smith's configuration does not have the claimed permanent magnet, so Smith's flux is produced only by his round coils. Therefore Smith cannot have the claimed situation in which the flux is strongest at one location of the core surface and weakest at another, much less that the core profile is, as claimed, thickest where the flux is strongest and thinnest where the flux is weakest. The other cited references, also, do not disclose a core thickest where the flux is strongest and thinnest where the flux is weakest. Therefore, claim 35 is patentable over the cited prior art.

Claim 36

Claim 36 depends from claim 1, which is distinguished from the prior art as explained above. To distinguish the invention even further from the prior art, claim 36 adds a limitation not included in the originally filed claims but supported in the specification at page 3, lines 26-27. This limitation is that the core includes a section formed of turns of a magnetically permeable wire. This is not suggested by any of the cited references. Claim 36 is thus patentable over the cited prior art.

Claim 19

Claim 19 recites an elongated core. An elongated magnet is parallel with the core, with a surface overhanging the core profile, as best illustrated in Fig. 4 of the application. Claim 19 is amended to specify that the magnet is a permanent magnet.

This is not disclosed by the cited references. As explained above, neither Smith, Ewing nor Janzen disclose the claimed permanent magnet parallel with a core. That is because Smith and Janzen have no permanent magnet, and Ewing has no core. Therefore, claim 19 is patentable over the cited prior art.

Claim 20

Claim 20 recites an elongated core. The core profile is surrounded on three sides by a magnet, as best illustrated in Figs. 10-12. Claim 20 is amended to specify that the magnet is a permanent magnet.

This is not disclosed by the cited references. As explained above, neither Smith, Ewing nor Janzen disclose the claimed permanent magnet parallel with a core. That is because Smith and Janzen have no permanent magnet, and Ewing has no core and his magnets are not parallel to a core. Therefore, claim 20 is patentable over the cited prior art.

Claims 21-33

The Examiner indicated that claims 5, 15, 16 and 18 would be allowable if rewritten in independent form.

Accordingly, claims 5, 15 and 16 are rewritten in independent form as new claims 21, 26 and 27, respectively. Claims 21, 26 and 27 should therefore be allowable.

Similarly, claim 18 is rewritten as new claim 31, with the exception that both occurrences of the term "identical" are omitted. Specifically, "a second core identical to and parallel" is replaced with "a second elongated core parallel", and "three identical elongated magnets" is replaced with "three elongated magnets". Applicant requests that the Examiner allow this alteration in claim language, because the claim is patentable over the cited references even with this alteration.

New claims 22-25, 27-30, and 32-33 depend from these allowable claims and should therefore also be allowable.

Of these, claim 23 recites a limitation not included in the originally filed claims but supported in the specification at page 3, lines 26-27 and illustrated in Fig. 2.

The application should now be in condition for allowance, and allowance is requested.

Respectfully Submitted,

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